

Application No. 10/084,241

AMENDMENTS TO THE CLAIMS

A detailed listing of all claims that are, or were, in the present application, irrespective of whether the claim(s) remains under examination in the application are presented below. The claims are presented in ascending order and each includes one status identifier. Those claims not cancelled or withdrawn but amended by the current amendment utilize the following notations for amendment: 1. deleted matter is shown by strikethrough for six or more characters and double brackets for five or less characters; and 2. added matter is shown by underlining.

Please amend claims 1 and 2 as indicated, and add new claims 9-13.

1. (Currently Amended) A method for two-level variable chip rate spreading and despreading in a CDMA (Code Division Multiple Access) system, the method comprising:

~~wherein~~ at a transmitting side, ~~a transmitter~~ applying ~~[[a]]~~ first level spreading to data information with a first level spreading code to produce a first level-spread signal, wherein the first level spreading code produces the first level a first spreading factor of a chips per symbol interval of the data information, gain being the length of the first level spreading code, and applying ~~[[a]]~~ second level spreading to the first level-spread signal chip with a second level spreading code to produce a second level-spread signal, wherein the second level spreading code produces a second spreading factor of b chips per each chip interval of the first level spreading code, gain being a length of the second spreading code, such that a total spreading factor for producing the second level-spread signal is equal to a product of the first spreading factor and the second spreading factor, wherein at least one of the first level and the second level spreading codes has a dynamically variable chip rate; and

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at a receiving side, a receiver first despreading the second level-spread signal chip first, including its integrating with a first interval of substantially a area-being the chip width of the first level-spread signal chip, then despreading the first level-spread signal chip, including its integrating with a second interval of substantially a area-being the width of an information bit of the data information.

2. (Currently amended) The method for two-level variable chip rate spreading and despreading in the CDMA system according to claim 1, wherein the first level spreading gain is equal to being the length of the first level spreading code, the second level spreading gain is equal to being a length of the second spreading code, and the total spreading gain is a product of the respective spreading gains after the two-level spreadings.

3. (Original) The method for two-level variable chip rate spreading and despreading in CDMA system according to claim 1, wherein in a system which the transmitters of respective base stations are quasi-synchronized, said method applying to the downlinks in CDMA system, said first level spreading code being used as a common code for all users in the same cell to distinguish users of different cells, said second level spreading code being used as the channel codes for each of the users of the cell to distinguish different users of the same cell.

4. (Original) The method for two-level variable chip rate spreading and despreading in CDMA system according to claim 1, wherein said method applying to the uplinks of the quasi-synchronized CDMA system, said first level spreading code being used as the common codes for

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all users in the same cell to distinguish users of different cells, said second level spreading code being used as the channel codes for each of the users of the cell to distinguish different users of the same cell.

5. (Original) The method for two-level variable chip rate spreading and despreading in CDMA system according to claims 1, 3 or 4, wherein ZCZ sequence which the zero correlation zone Z is 1 being used as the common codes, ZCZ sequence having the corresponding zero correlation zone being used as the channel codes, and said receiver despreading the common codes and the channel codes respectively.

6. (Original) The method for two-level variable chip rate spreading and despreading in CDMA system according to claims 1, 3 or 4, wherein Walsh sequence being used as the common codes, ZCZ sequence having the corresponding zero correlation zone being used as the channel codes, and said receiver despreading the common codes and the channel codes respectively.

7. (Original) The method for two-level variable chip rate spreading and despreading in CDMA system according to claims 1, 3 or 4, wherein ZCZ sequence which the zero correlation zone Z is 1 being used as the common codes, the orthogonal sequence being used as the channel codes, and said receiver despreading the common codes and the channel codes respectively.

8. (Original) The method for two-level variable chip rate spreading and despreading in CDMA system according to claims 1, 3 or 4, wherein PN (pseudo-random) sequence being used as the

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common codes, and ZCZ sequence having the corresponding zero correlation zone being used as the channel codes, and said receiver despreading the common codes and the channel codes respectively.

9. (New) The method for two-level variable chip rate spreading and despreading in the CDMA system according to claim 1, further comprising the step of dynamically varying a chip rate of at least one of the first level and the second level spreading codes.

10. (New) A method of applying two-level spreading to an information signal in a CDMA (Code Division Multiple Access) system, wherein the information signal has a length of  $x$  symbols, the method comprising:

applying first level spreading to the information signal with a first level spreading code having a length of  $y$  symbols to produce a first level-spread signal having a length of  $x \cdot y$  symbols; and

applying second level spreading to the first level-spread signal with a second level spreading code having a length of  $z$  symbols to produce a second level-spread signal having a length of  $x \cdot y \cdot z$  symbols.

11. (New) The method of claim 10, wherein at least one of the steps of applying the first level spreading and applying the second level spreading includes varying at least one of the lengths  $y$  or  $z$  dynamically.

12. (New) A method of applying two-level spreading to an information signal in a CDMA (Code Division Multiple Access) system, wherein the information signal has a bit rate the method comprising:

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applying first level spreading to the information signal with a first level spreading code having a first chip rate to produce a first level-spread signal having a second chip rate equal to a product of the bit rate and the first chip rate; and

applying second level spreading to the first level-spread signal with a second level spreading code having a third chip rate to produce a second level-spread signal having a chip rate equal to a product of the second chip rate and the third chip rate.

13. (New) The method of claim 12, wherein at least one of the steps of applying the first level spreading and applying the second level spreading includes varying at least one of the first and third chip rates.